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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,752	09/25/2003	Tsuneo Mishima	81872.0054	2811
26021	7590	04/25/2005	EXAMINER	
HOGAN & HARTSON L.L.P. 500 S. GRAND AVENUE SUITE 1900 LOS ANGELES, CA 90071-2611			HAM, SEUNGSOOK	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 04/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/670,752

Applicant(s)

MISHIMA ET AL.

Examiner

Seungsook Ham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/3/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on March 3, 2005 has been entered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "a resonant circuit which includes in part a variable capacitance thin film capacitor device" (claim 30, lines 13-15) and "a variable capacitance thin film capacitor device for use as a capacitance element for coupling a plurality of resonant circuits" (claim 31, lines 6-8) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

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and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Allowable Subject Matter

The indicated allowability of claims 1-31 is withdrawn in view of the newly discovered reference(s) to Gikow (US 3,569,795) and Tsuda (US 6,018,282).

Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 1-9, 11, 14 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Gikow (US '795, cited by applicant).

Gikow (fig. 3) discloses a variable capacitance circuit comprising: first to Nth variable capacitance elements sequentially connected in series between an input terminal (AC signal connected to the bottom electrode 34) and an output terminal (AC signal connected to the top electrode 32), whose capacitances change depending on voltage applied thereto; an i th bias line (DC control voltage that connected to resistors 35, 39 on the input terminal side provided between an input terminal portion of the first variable capacitance element (the capacitance between the electrodes 34, 37) and a connection point between a 2 i th variable capacitance element (the capacitance between the electrodes 33 and 37) and a $(2i+1)$ th variable capacitance element (the capacitance between the electrodes 32 and 33); and an i th bias line (DC control voltage that connected to resistors 36, 38) on the output terminal side provided between an output terminal portion of the Nth variable capacitance element (the capacitance between the electrodes 32 and 33) and a connection point between a $(2i-1)$ th variable capacitance element (the capacitance between the electrodes 34 and 37) and the 2 i th variable capacitance element (the capacitance between the electrodes 33 and 37), where N and i are integers satisfying $N=2n+1$, $n \geq 1$, $1 \leq i \leq n$ (where $N=3$ and $n=1$); the bias lines on the input terminal side and the output terminal side includes resistors 35-38.

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The subject matter of claims 3 and 4 are inherent from the device of Gikow since Gikow teaches that the resistors has high value to have negligible effect on the input terminal/AC (col. 2, lines 18-20).

Regarding claim 7, Gikow (fig. 4) discloses a plurality of groups of the first to Nth variable capacitance elements connected in series (fig. 4, col. 2, lines 55-68).

Regarding claim 8, Gikow also teaches that the variable capacitance thin film capacitor can be formed on a basic substrate (col. 3, lines 1-5).

Regarding claim 9, Gikow (figs. 1, 3 and 4) discloses the variable capacitance film capacitor comprises a thin film dielectric layer 32 disposed between upper 32 and lower 33 electrode layers sequentially stacked together on the basic substrate (col. 3, lines 1-5).

Regarding claim 14, the bias lines (the lines that connected DC to resistors 35, 36, 38, 39) are in the form of a straight line.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10, 12, 13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gikow (US '795, cited by applicant) in view of Nakamichi et al. (US '773).

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Gikow is applied as above. Gikow does not show the thin film dielectric layer comprises of $(\text{Ba}_x\text{Sr}_{1-x})\text{Ti}_y\text{O}_{3-x}$. However, such ferroelectric material is well known in the art as shown by Nakamichi et al. (col. 7, lines 25-32). It would have been obvious to one of ordinary skill in the art to use $(\text{Ba}_x\text{Sr}_{1-x})\text{Ti}_y\text{O}_{3-x}$ as the dielectric layer in the device of Gikow since such dielectric material is well known ferroelectric material as shown by Nakamichi et al.

Regarding claims 12, 13, and 15-18, Gikow does not show the specific materials and the specific connection for the bias line. However, the specific materials for the bias lines recited in claims 15-18 are well known in the art.

Nakamichi et al. (figs. 1 and 2) discloses a variable capacitance thin film capacitor device having a bias line 8, 9 is formed over the variable capacitance element 4 connected in series with an insulation layer 17 interposed therebetween. Moreover, Nakamichi et al. teaches the electrodes are made of Pt (col. 7, lines 35-39).

It would have been obvious to one of ordinary skill in the art to provide the bias lines formed over the variable capacitance elements or using different conductive materials as the bias lines in the device of Gikow since such design techniques are well known in the art as shown by Nakamichi et al., and it requires only a routine skill in the art.

Claims 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gikow (US '795, cited by applicant) in view of Nakamichi et al. (US '773) as applied to claim 8 above, and further in view of Arcidiacono et al. (US '867).

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The modified device of Gikow does not show whether the resistors 35, 36, 38 and 39 are thin film resistors. However, thin film resistors are well known in the art.

Arcidiacono et al. (figs. 1-2H) discloses an RC filter having a thin film resistor coupled to a capacitor. The thin film resistor is comprised of Ni-Cr alloy (col. 2, line 43) or tantalum nitride (col. 4, line 27).

It would have been obvious to one of ordinary skill in the art to use thin film resistors of Arcidiacono et al. in the modified device of Gikow since both resistors are functionally equivalent. The specific materials for the resistor is considered as obvious design modification since such materials are well known in the art.

Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gikow (US '795, cited by applicant) in view of Tsuda et al. (US '282).

Gikow does not show using the variable capacitance circuit in resonant circuits. However, Gikow teaches that the variable capacitance circuit can be used in variable circuit (col. 2, lines 52-54).

Tsuda (figs. 1-3, 5 and 15) shows a plurality of resonant circuits 55 coupled to a variable capacitance circuit 53. It would have been obvious to use the variable capacitance circuit of Gikow in a resonant circuit(s) to vary the resonant frequency since such design technique is well known in the art as shown by Tsuda.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kennedy, III et al. and Lee et al. disclose a thin film RC device.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (571) 272-2405. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Seungsook Ham
Primary Examiner
Art Unit 2817

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